

Registered Testing Authority - Building Code of Australia

23 April 2007

Our Ref. ES13 / 640 03/0212

TEST REPORT No. SY1270-3

Requested by: Forbo Floorcoverings Pty Ltd
on (date): 2 April 2007
Manufacturer: Forbo Floorcoverings
Product Desc.: Eternal - Impact

Sampling details:
Where: Delivered
Date: 11 April 2007
By whom: Courier
How (methods): N/A

The results reported relate only to the sample(s) tested and the information received. No responsibility is taken for the accuracy of the sampling unless it is done under our own supervision. CSIRO cannot accept responsibility for deviations in the manufactured quality and performance of the product. While CSIRO takes care in preparing the reports it provides to clients, it does not warrant that the information in this particular report will be free of errors or omissions or that it will be suitable for the client's purposes. CSIRO will not be responsible for the results of any actions taken by the client or any other person on the basis of the information contained in the report or any opinions expressed in it. The reproduction of this test report is only authorised in the form of a complete photographic facsimile. Our written approval is necessary for any partial reproduction.

This test report consists of 6 pages

SUMMARY OF SLIP RESISTANCE TESTS PERFORMED:

		Result	Class
AS/NZS 4586:2004	Slip resistance classification of new pedestrian surface materials		
	Appendix A: WET Pendulum (Four S). Mean BPN:	39	X
	Appendix B: DRY (FFT). Mean COF:	0.60	F
	Appendix A,B: Dual classification:		XF
AS/NZS 4586:2004	Slip resistance classification of new pedestrian surface materials		
	Appendix C: WET/BAREFOOT Ramp		
	Mean angle of inclination:	12°	
AS/NZS 4586:2004	Slip resistance classification of new pedestrian surface materials,		
	Appendix D: OIL-WET Ramp		
	Mean overall acceptance angle:	14.0°	R 10

In order to interpret the classifications, please refer to Standards Australia Handbook 197, An Introductory Guide to the Slip Resistance of Pedestrian Surface Materials, which recommends minimum classifications for a wide variety of locations.

It is important to realise that test results obtained on unused factory-fresh samples may not be directly applicable in service, where proprietary surface coatings, contamination, wear and subsequent cleaning all influence the behaviour of the pedestrian surface.

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SLIP RESISTANCE CLASSIFICATION OF NEW PEDESTRIAN SURFACE MATERIALS

WET PENDULUM TEST METHOD

TEST CARRIED OUT IN ACCORDANCE WITH
AS/NZS 4586:2004 (Appendix A)

Test Date: 11 April 2007

RESULTS:	Location:	Highett Slip Resistance Laboratory	Rubber slider used: Four S
	Sample:	Fixed	Conditioned with grade P400 paper, dry
	Cleaning:	Acetone	
	Temperature:	23°C	

Pendulum Friction Tester: Stanley (S/N: 0312, calibrated 03/02/07)
Test conducted by: Peter Westgate

	Specimen 1	2	3	4	5
Last 3 swings	41	37	39	38	40
	40	37	39	37	40
	40	36	39	37	39
Averages	40	37	39	37	40

Mean BPN : 39

CLASS :

X

Where products are to be used in wet barefoot areas, it is more appropriate to test to Appendix C of AS/NZS 4586 (which is technically equivalent to DIN 51097).

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SLIP RESISTANCE CLASSIFICATION OF NEW PEDESTRIAN SURFACE MATERIALS

DRY FLOOR FRICTION TEST METHOD

TEST CARRIED OUT IN ACCORDANCE WITH
AS/NZS 4586:2004 (Appendix B)

Test Date: 11 April 2007

RESULTS	Location:	Highett Slip Resistance Laboratory	Rubber Type: Four S Conditioned with grade P400 paper, dry
	Sample	Fixed	
	Cleaning:	Acetone	
	Temperature:	23°C	
	FFT measurements taken over 2 passes of 800mm each		

Floor Friction Tester: Tortus Mk II (S/N: 244)
Test conducted by: Peter Westgate

Run 1: Average COF: 0.59

Run 2: Average COF: 0.60

Mean COF: 0.60

According to AS/NZS 4586 the Dry Coefficient of Friction shall be reported as :
(mean rounded to the nearest 0.05)

0.60

CLASS :

F

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SLIP RESISTANCE CLASSIFICATION OF NEW PEDESTRIAN SURFACE MATERIALS

WET/BAREFOOT RAMP TEST METHOD

TEST CARRIED OUT IN ACCORDANCE WITH
AS/NZS 4586:2004 (Appendix C)

Test Date: 11 April 2007

Location: Slip Resistance Laboratory

Sample Fixed

Joint width: mm

Surface structure:

<input checked="" type="checkbox"/>	Smooth
<input type="checkbox"/>	Profiled
<input type="checkbox"/>	Structured

RESULTS

		Actual mean	Reported mean
Mean angle of inclination:	Calibration Board A:	12.78 °	13 °
	Calibration Board B:	18.16 °	18 °
	Calibration Board C:	25.10 °	25 °
Mean angle of inclination of Test Board:		12.34 °	12 °

CLASSIFICATION:

Quality Group:

PLEASE NOTE!

This pedestrian surface material cannot be classified because the mean angle of inclination of calibration Board A was 12.78 and the test sample only achieved the lower mean result of 12.34 degrees.

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SLIP RESISTANCE CLASSIFICATION OF NEW PEDESTRIAN SURFACE MATERIALS

OIL-WET RAMP TEST METHOD

TEST CARRIED OUT IN ACCORDANCE WITH
AS/NZS 4586:2004 (Appendix D)

Test Date: 11 April 2007

Location: Slip Resistance Laboratory

Sample Fixed

Joint width: mm

Surface structure:

<input checked="" type="checkbox"/>	Smooth
<input type="checkbox"/>	Profiled
<input type="checkbox"/>	Structured

RESULTS

Mean overall acceptance angle: 14.0 °

Displacement space: not tested

CLASSIFICATION:

Slip Resistance Assessment Group:

R 10

Displacement Space Assessment Group:

-



Industrial Research Services

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Date and Place 23 April 2007, North Ryde, NSW

Name, Title and Digital Signature:

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Consulting services are available if further detailed analysis of the test results are required.

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Addendum

DETERMINATION OF Rz SURFACE ROUGHNESS

(Using a Taylor-Hobson Surtronic 10 Rz roughness meter using a 0.8mm cut off length)

Test Date: 11 April 2007

RESULTS

Location: Slip Resistance Laboratory

Rz values

1	12.4
2	18.0
3	17.5
4	19.6
5	12.2
6	19.0
7	18.5
8	20.5
9	18.1
10	19.0

Surface Roughness (Rz) mean = 17.5 microns

BS 7976:2002, Pendulum Testers, requires a different test foot preparation (lapping paper) for pedestrian surfaces that have a Rz roughness of less than 15 microns. This lapping paper tends to reduce the pendulum result, sometimes appreciably. CSIRO recommends the use of this procedure (CSIRO COF1) as an adjunct to AS/NZS 4586. It helps to discriminate among products that have marginal wet slip resistance and to identify those that may be dangerous if wet.

The measurement of the various aspects of surface roughness is complex given the number of potential roughness parameters. While there is still some uncertainty as to exactly what type of roughness needs to be measured, peak-to-trough roughness (Rz) gives a useful guide to the likely slip resistance in wet conditions. Research has suggested that hard floors need to have a slightly higher Rz roughness than polymeric floors for the same degree of safety in wet conditions, but whatever flooring material is used an Rz roughness value of at least 10 microns is required where wet slip resistance may be required. In circumstances where wetness is normal or expected, this figure should be increased by a factor of 2 or more.

Greater peak surface roughnesses are likely to be required where floors slope or where the floor is likely to become contaminated with high viscosity liquids.